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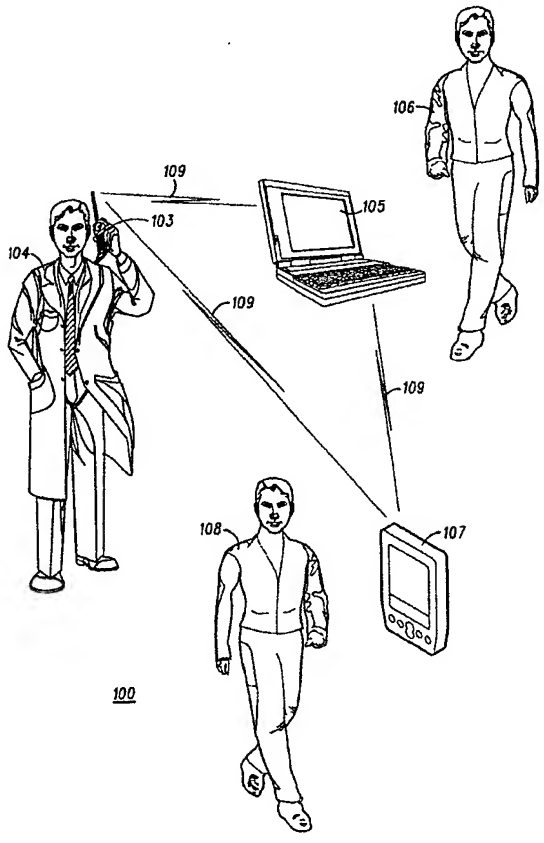
(54) Title: METHODOLOGY AND WIRELESS DEVICE FOR INTERACTIVE GAMING



(57) Abstract: A wireless gaming device (103, 105, 107) and methods therein is arranged and constructed for establishing and effecting interactive gaming and includes a transceiver (303, 307); and a controller (309), cooperatively operable with the transceiver, to discover an other wireless gaming device (803); and negotiate with the other wireless gaming device to identify compatible capabilities, needs and rules relevant to a gaming scenario (805 - 809). When conducting a game the gaming device may initiate a gaming action (907) or respond to such an action with a counter action (909) with the results assessed (913), for example, at one or more gaming devices and dependent upon signal strength.

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METHODOLOGY AND WIRELESS DEVICE FOR INTERACTIVE GAMING

FIELD OF THE INVENTION

This invention relates in general to interactive gaming and more specifically to methods and wireless devices for interactive gaming.

BACKGROUND OF THE INVENTION

Various approaches and software exist for playing games on various forms of devices including wireless devices. The majority of such games are self contained within a device or wireless device. For example various games or software packages for games are available for playing a resident game on a cell phone or other personal digital assistant or messaging device. Some practitioners have contemplated games played from a wireless device or a wired device via the Internet or WEB that interact with or through a centralized controller. There are games played on specialty wireless devices having known predetermined and equal capabilities. Known devices and interactive gaming techniques are restrictive or inflexible with respect to device or user preferences and capabilities and thus do not support a generalized interactive virtual gaming environment between diverse capability wireless devices. A need exists for more flexible and autonomous gaming methods and apparatus.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying figures, where like reference numerals refer to identical or functionally similar elements throughout the separate views and which together with the detailed description below are incorporated in and form part of the specification, serve to further illustrate various embodiments and to explain various principles and advantages all in accordance with the present invention.

FIG. 1 depicts, in a representative form, a simple setting for interactive gaming;

FIG. 2 illustrates in a representative form, a more complex setting for arranging and conducting interactive gaming;

FIG. 3 depicts a block diagram of a preferred embodiment of a wireless gaming device;

FIG. 4 through FIG. 6 illustrate, respectively, representative tables of capabilities, needs, and rules for establishing interactive gaming;

FIG. 7 shows a simplified flow chart of a method embodiment suitable for negotiating the capabilities, needs, and rules between two or more gaming devices;

FIG. 8 illustrates a preferred method of arranging an interactive game among wireless devices with differing needs and capabilities; and

FIG. 9 shows a method of conducting an interactive game among a plurality of wireless devices.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In overview form the present disclosure concerns systems, methods, and equipment or apparatus that provide or may be used for interactive gaming or coordination of gaming services among people and their associated resources or preferably wireless devices, such as cellular phones, personal digital assistants (PDA), messaging devices, two-way radios, or specialty gaming devices and the like, provided they include wireless capabilities and preferably short range ad-hoc connectivity capabilities such as those provided by IEEE 802.11, European Hiper-Lan, Bluetooth, etc. compatible devices. More particularly various inventive concepts and principles embodied in user or wireless gaming devices and methods therein for providing an interactive gaming experience or arranging such an experience and coordination of needs and capabilities among a plurality of gaming devices and individuals, many or all with differing processing and user interface capabilities and needs, for the convenience and advantage of users or consumers of such gaming services are discussed and described.

The systems, equipment, and the like and methods of establishing or conducting interactive gaming rely on some form of connectivity, thus network, that is mostly and preferably a wireless ad-hoc network comprised of or ranging from a solitary connection among two devices up to a multiplicity of connections among many devices. Networks of particular interest are likely organized in a similar manner but may include multiple ad-hoc arrangements coupled via a wide area network (WAN) and the links within the network may be characterized with varying bandwidth capabilities. It is expected that a preferred form of access to this network

by resources or equipment and individuals or their respective devices may be a low power, thus local or short range, wireless packet data link or connection such as available using IEEE 802.11, Bluetooth and the like based access techniques and equipment.

The instant disclosure is provided to further explain in an enabling fashion the best modes of making and using various embodiments in accordance with the present invention. The disclosure is further offered to enhance an understanding and appreciation for the inventive principles and advantages thereof, rather than to limit in any manner the invention. The invention is defined solely by the appended claims including any amendments made during the pendency of this application and all equivalents of those claims as issued.

It is further understood that the use of relational terms, if any, such as first and second, top and bottom, and the like are used solely to distinguish one from another entity or action without necessarily requiring or implying any actual such relationship or order between such entities or actions. Much of the inventive functionality and many of the inventive principles are best implemented with or in software programs or instructions and integrated circuits (ICs) such as application specific ICs. It is expected that one of ordinary skill, notwithstanding possibly significant effort and many design choices motivated by, for example, available time, current technology, and economic considerations, when guided by the concepts and principles disclosed herein will be readily capable of generating such software instructions and programs and ICs with minimal experimentation. Therefore, in the interest of brevity and minimization of any risk of obscuring the principles and concepts according to the

present invention, further discussion of such software and ICs, if any, will be limited to the essentials with respect to the principles and concepts used by the preferred embodiments.

Referring to FIG. 1, a representative and simple setting or diagram of a system 100 for interactive gaming will be discussed and described. FIG 1 shows a communications unit such as a cellular device or handset that is also a gaming device 103 with an associated user 104, a portable computer or messaging device that is also a further gaming device 105 with an associated user 106, and a personal digital assistant (PDA) such as those available from various manufacturers that represents or acts as yet another gaming device 107 with an associated user 108. Each of these gaming devices are merely representative of gaming devices that may be used. Each is equipped with wireless capability that is usable to establish wireless connections or links 109 with other gaming devices when, for such purposes, and so long as the user may desire. The gaming devices are arranged in what is often referred to as a peer-to-peer arrangement or association rather than on a more centralized client server basis or arrangement. The ability to establish a wireless link between devices is based on path losses, due for example to path lengths and path obstacles, between devices as the wireless links utilize low power transceivers. The gaming devices may also operate through another device. For example if the direct wireless link between gaming device 103 and gaming device 107 is not available due to excessive path loss, the device 103 may still be able to communicate with and establish a mutually advantageous association with device 107 via device 105.

Furthermore the various devices 103, 105, 107, etc., cellular handsets, PDAs, portable computers and so on, are likely to represent or encompass a broad range of user input output, memory, wireless link bandwidths, and processing capabilities or constraints. For example the portable computer operating as a gaming device is likely to have the most extensive memory, user I/O and display capabilities but may have more limited autonomy and diversity of communications capabilities or wireless link bandwidths or capacity than for example the cellular phone or other advanced user messaging device. The individual users may further have widely varying preferences as to gaming desires, and available attention, whether expressed as a percentage of time or on a length or duration of time basis. For example, one of the users may wish to engage in a game of checkers whereas another wants to engage in some sort of aircraft combat game. The gaming devices in FIG. 1 are generally equipped, arranged, and constructed to discover each other and negotiate and identify compatible capabilities, desires, and needs in order to form associations that are mutually advantageous for each other and the associated users in the context of interactive gaming.

Referring to FIG. 2, a representative form of a more complex setting or playing field 200 that is suitable for arranging and conducting interactive gaming will be discussed and described. This setting or playing field is used by participants for a simulated or virtual game on a life like scale and is likely to be used either commercially as the next version of paint ball or perhaps for more serious purposes such as simulation of real experiences. The playing field of FIG. 2 represents on the one hand a more limited version of interacting gaming, given that one game is being

played, and on the other hand an opportunity for the individual user to engage in a more specialized role in a more complex game, for example a foot soldier or artillery operator in a war game. While many examples could be used for this explanation we have chosen a combat or war games example for explaining the principles and concepts employed within this version of interactive gaming with gaming devices suited for such gaming.

The boundary or perimeter of the playing field, if a boundary is needed, is determined or defined by a plurality of wireless devices 205 –209 with respective associated directional antennas that are placed sufficiently proximate to each other so that a participant or user or specifically their gaming device can establish a link with each of two or more devices which define or determine the boundary or perimeter. These devices 205-209 would be expected to transmit, or alternatively respond with when queried, a message or code signifying them as perimeter defining devices. In addition the playing field may have additional stationary devices 211, 212, 213, and 215 with omni directional antennas that would be used, when location is required by a game, to determine or allow a gaming device that is participating in the game to determine its location. The number and location of these devices would be determined by the size of the field and the resolution required for a location determination, such as may be advantageous in certain games. Of course with sufficient processing power, triangulation using at least three devices at known locations can provide a gaming participant or device with relatively precise location information. The perimeter devices and other stationary devices may also be used for collecting data from the participating gaming devices or on their own volition and

reporting such data to a centralized scorekeeper (not depicted but some form of computer).

A multiplicity of other features for the playing field may be made available or defined. For exampled, a mine field 217 is depicted that is comprised of a multiplicity of wireless devices that are individually enabled by motion or perhaps when a participant or gaming device approaches within a predetermined and presumably very close range. A mine exploding can be simulated with a transmission or a transmission with a particular message or codes and if additional realism is desired an audio transducer can generate some sense of an explosion. The signal strength alone at a user or gaming device can be used to signify a mortal wound or serious or minor injury or the mine can transmit the rules for its explosion, namely for a signal strength above some level a mortal injury is sustained by the participant and so on. Alternatively the mine can detect the signal strength from those participants that are proximate and report to the scorekeeper the results sustained by the participants as well as report to the respective participants. Another feature of the playing field that is depicted is an obstacle or barrier 219. This is likely a passive feature that is constructed to attenuate radio signals from or between devices and can be used by participants to seek shelter or otherwise for the sake of surprise. Of course these barriers may come in differing sizes and forms to lend credence to the playing field. These features have been described by way of example only. Other features germane to the game that will be conducted or played on the playing field will be available and apparent to one of ordinary skill, given the discussions herein.

Also depicted in FIG. 2 is a multiplicity of participants each with one or more wireless gaming devices. Participant or user 221 is shown with a hand thrown or launched device 223, either real or simulated object, that may be representative of a grenade or artillery shell or other area coverage weapon or munition. Participant 225 is shown sending a transmission 229 toward a target, here participant 227, where the transmission 229 may be representative of small arms, such a rifle shot or laser beam. The transmission can include participant 225 location as well as range and bearing for the small arms fire or laser beam. The gaming device associated with participant 227 will know its own location and thus can determine whether the small arms fire or laser beam was successful or fatal for participant 227 as well as recommend evasive action or counter action depending on the resources available to participant 227. For example a counter shot or the like. Participant 231 is depicted and associated device is shown behind the obstacle 231 and thus probably less susceptible to injury from the hand thrown device or grenade whereas participants 233, 235 appear to be in more exposed positions. Again using information concerning the position of the gaming device 223 or grenade explosion or, for example, signal strength, users or game participants 233, 235 and their respective gaming devices can assess their respective damage. In a similar manner differing levels of personal body protection, such as helmets, body armor, gloves, environmental suit, etc. may be simulated along with their effects on play outcomes. Additional participants 237, 239, 241, and 243 and respective devices are also depicted. It should be noted that each of the participants has one or more associated gaming devices and even though they are playing or participating in the same game or game scenario the devices may be dramatically different and the roles within the game assumed by each individual may be different.

The devices discover each others presence once in sufficiently close proximity as well as each other's capabilities and needs. Note that the participants or devices that are participating are able to independently determine the game outcomes and verify these outcomes thereby eliminating significant disagreements.

Referring to FIG. 3, a block diagram of a preferred embodiment of a wireless gaming device will be described and discussed. This gaming device is suitable for use in the gaming setting depicted in either FIG. 1 or FIG. 2. The wireless gaming device is a short range low power radio device suitable for forming ad-hoc wireless links or connections with other such devices that are sufficiently proximate or close. Various air interface protocols are defined for such connections or links such as those mentioned above. The gaming device is arranged and constructed for interactive gaming and includes an antenna 301 coupled to a conventional transceiver including a receiver 303 with a radio signal strength indication 305 and transmitter 307 that are inter coupled to and cooperatively operate with a controller 309 to establish, maintain, and support the wireless links and support various other functionality discussed below. The controller 309 is inter coupled to a user interface including one or more of a display 311, control buttons 313, indicators 315, an optional keyboard 317, and optional joystick, each well known and perhaps additional I/O devices. The specific user interface and capabilities will depend on the specific gaming device or device acting as a gaming device. For example a PDA may have a more extensive interface than a cell phone and so on.

The controller 309 includes a known processor comprising for example, one or more microprocessors 321 and one or more digital signal processors 323, a port 325

for coupling for example to an optional portable computer 327, and memory 329. The memory includes various known forms of memory such as RAM, ROM, EEPROM, or other electronic or magnetic based memory elements. The memory will store various software instructions or routines and data that when executed and utilized will cause or result in the controller controlling the gaming device according to the principles and concepts disclosed herein. More specifically the routines included will be an operating system 331, operation variables and parameters such as user or device IDs (identifiers), etc., a discovery routine 335 for facilitating detection of other gaming devices and ad hoc devices, a negotiation routine 336 for identifying compatible capabilities, needs, preferences, gaming rules such as game rules, device rules, and user rules, as well as numerous other routines 337 obvious to one of ordinary skill and not here specifically relevant.

In operation the wireless gaming device is arranged and constructed for interactive gaming as earlier noted and includes the controller 309, cooperatively operating with the transceiver, to discover another wireless gaming device using the discovery routine 335; and negotiating via the negotiating routine 336 with the other wireless gaming device to identify compatible capabilities and needs relevant to a gaming scenario. The various air interface protocols include known techniques for discovering other devices and these techniques work equally well for these gaming devices. The negotiating capabilities and needs may be or is accomplished by the two gaming devices exchanging messages that specify respective capabilities and needs. Where one's capabilities meet or match another's needs a compatible capability and need exist. The controller will preferably further negotiate gaming rules with the

other wireless gaming device to establish the gaming scenario, where the gaming rules include game rules, gaming device rules, or user rules and preferences.

The negotiation of game rules may include negotiating, for example, type of game, such as checkers or air to air combat, game scenario preferences, such as type of poker or infantry, armor or artillery, or number of opponents. The negotiation of the gaming device rules may include, for example, graphical user interface constraints and other input output constraints. For example one gaming device, such as some cellular handsets, may have a limited black and white display while the other includes a full color portable computer display while one device has a joystick and the other does not. These participants or gaming devices could still engage, for example, in a game of Pong with the limited display device experiencing a two dimensional version of the game while the full color with joystick gaming device experiences a three dimensional ring side view of the game. Note, even for this limited version of Pong to be engaged in, the portable computer may end up downloading or providing some gaming software to the cellular handset. Additionally, negotiation of the user rules or preferences may include, for example, user perception limitations, such as a user or participant that is deaf, duration of availability (25 minutes before the plane boards), access/security constraints in order to limit what portions of a device are accessible or under what circumstances what is accessible to whom, and age preferences (16 year olds do not enjoy playing with 50 year olds).

The wireless gaming device or specifically controller may negotiate the compatible capabilities including, for example: data protocols, such as Java, HTML. XTML, etc; a data rate, such as x bits or y bytes per second; display capabilities, such

as those earlier noted; available processing resources, such as 25% or 50% of the devices capabilities, and signal strength parameters needed to maintain a given capacity link or levels signifying a gaming result. The negotiation of the compatible needs may include, for example, a language for user consumption, such as English or French, external processing resources or requirements, such as a portable computer or a portion thereof, and gaming software programs. For example, two devices may engage in a game and one of the devices may supply or provide nearly all of the processing resources. For example a portable computer may be one interactive gaming device and a cellular handset another with, as the result of negotiating, the computer supplying virtually all of the processing resources. These devices would participate in a game and the information exchanged between the devices pursuant to the game would be limited to moves or countermoves by the participants and results of such moves according to the gaming rules that have been determined. Even the gaming software used by the handset could be supplied by the portable computer version of a gaming device. At any rate the wireless gaming device or specifically the controller cooperatively with the transceiver may discover a plurality of other wireless gaming devices and negotiate mutually compatible capabilities and needs as well as gaming rules relevant to a gaming scenario with these devices.

Referring to FIG. 4 through FIG. 6, representative tables of device capabilities, device needs, and gaming rules, respectively, one or more which may require some negotiation in order to or for establishing interactive gaming between two or more gaming devices will be sequentially discussed and described. FIG. 4 depicts a listing of representative capabilities 403 and corresponding codes 405 for a device such as

103, 105, and 107. Generally the codes are a bandwidth saving technique that will typically need to be agreed upon or predetermined, e.g. xyz corresponds to HTML as a data protocol, prior to the negotiation. Generally a negotiation will include an exchange of messages between gaming devices where the messages include the originating device or user ID or address, a destination user or device ID or address, and a listing of codes indicative of the respective capabilities as well as codes indicative of needs (from FIG.5) and perhaps codes for rules (from FIG. 6). Generally when a capability from one gaming device matches a need from another device a compatible capability and need have been identified or negotiated. There may be multiple exchanges in order to arrive at or identify compatible capabilities, needs, or rules relevant to a gaming scenario. It is anticipated that the respective gaming units may exchange software routines in some instances in order to establish a compatible capability and need and this may occur even more frequently with the gaming rules. The reader can review the exemplary list of capabilities and it is further noted that many more capabilities may be included in an actual list and that many of the listed capabilities, such as data protocols, may have or represent multiple listings in an actual table. It is believed that the individual items are either self-explanatory or have already been sufficiently discussed herein.

Referring to FIG. 5, an exemplary table of needs is depicted and will be described and discussed. The table shows a list of representative device needs 503 with corresponding codes 505 for a device 103, 105, 107. The reader will note a high degree of correlation between the list of capabilities from FIG. 4 and the FIG. 5 list of needs. Some differences that among the listed entities includes LANGUAGES from

FIG. 4 indicating, for example, that the gaming device is perhaps capable of English and French whereas the USER LANGUAGE from FIG. 5 would indicate that the user or gaming device requires or needs English. The PROCESSING RESOURCES of FIG. 4 is usually a declaration of resources, such as gross MIPS and may include, for example, any special capabilities such as a 32 bit floating point digital signal processor or the like. The PROCESSING RESOURCES AVAILABLE / EXTERNAL) of FIG. 5 is an indication of what resources may be made available or in some cases an indication that external resources are needed. Note the table of needs is representative and certain items may not be included such as a minimum signal strength or received power to participate in an interactive game. The balance of FIG. 5 is evident to one of ordinary skill and the reader is reminded that the table is merely exemplary and that many more needs may be included in an actual needs table for a gaming device.

Referring to FIG. 6, an exemplary table or list of gaming rules 603 is shown together with corresponding codes and sub-codes 605 for a gaming device 103, 105, 107. The gaming rules include one or more of game rules 607, gaming device rules 609, and user preferences or rules 611 each including sub entities or sub elements such as those listed. Again an actual table is likely to include a multiplicity of additional gaming rules in one or more of the noted categories.

Referring to FIG. 7, a simplified flow chart of a method embodiment suitable for negotiating the capabilities, needs, and rules between two or more gaming devices will be described and discussed. Note this is a high level flow diagram and various steps may be repeated a number of times to arrive at a satisfactory configuration for

two or more gaming devices to engage in a game. The process begins at 701 where a gaming device discovers one or more other potential gaming devices. Then or as part of this discovery the respective devices exchange information suitable for providing or obtaining authorization 703 to interact with each other, preferably pursuant to establishing a gaming scenario. Next at 705 an evaluation and negotiation of peer device needs and or capabilities is undertaken. If that is successful then 707 shows an evaluation or negotiation of gaming rules pursuant to a determination of mutual interest. Note that this may require user interaction via the user interface in order to answer questions such as "do you want to play checkers, etc?" If all goes well and sufficient compatible capabilities and needs exist as well as mutual interest then 709 shows playing the game on an interactive basis between two or more peer gaming devices and players.

Referring to FIG. 8, a preferred method of arranging an interactive game with a wireless gaming device or among wireless gaming devices with differing needs and capabilities will be reviewed, discussed, and described. Much of this discussion will be in the nature of a review of various principles and concepts discussed above and will thus be at a relatively high level with limited detail. The method of FIG. 8 is iterative and recursive and begins at 803 with discovering another or one or more other wireless gaming devices and then 805 depicts negotiating with the other gaming devices. The negotiation is pursuant to identifying, as a result of the negotiation, compatible capabilities such as data protocols, data rates, display capabilities, available processing resources, and signal strengths as well as compatible needs such as a language for user consumption, external processing resource needs, and gaming

software programs, relevant to a gaming scenario or mutually acceptable game to be played.

Then 809 depicts identifying gaming rules that are compatible with the other wireless device and relevant to establishing the gaming scenario. These compatible and relevant gaming rules include game rules, such as type of game, game scenario preferences, or number of opponents. Further included, as shown at 811, in identifying the gaming rules is identifying gaming device rules, such as, graphical user interface constraints and other input output constraints. Next 813 depicts identifying the gaming rules to include identifying user rules including one or more of user limitations, such as user perception or user activity limitations, duration of availability, access/security constraints, or age preferences or user or personal preferences. Such personal preferences would include specific game rules such as deuces wild or I want to be black in checkers or the ship in monopoly. After these matters have been taken care of a mutually enjoyable and advantageous interactive gaming experience can be undertaken.

Referring to FIG. 9, a method of conducting an interactive game among a plurality of wireless devices will be discussed and described. The method of FIG. 9 is iterative and recursive and includes at 903 discovering a plurality of gaming devices and at 905 negotiating one or more of: gaming rules, such as one or more of game rules, gaming device rules, and user rules, gaming capabilities, such as those noted above, gaming needs, such as those mentioned above, and gaming preferences among the plurality of wireless gaming devices in order to effect a game among those gaming devices.

Then 907 shows initiating according to the gaming rules, a gaming action at and, preferably, specific to one of the plurality of wireless gaming devices acting as a first gaming participant and then 909 shows responding, according to the gaming rules, with a counter gaming action at and, preferably, specific to a second of the plurality of wireless gaming devices. As noted at 913 a result of either the gaming action or counter gaming action, preferably is assessed according to the gaming rules at one or both of the plurality of gaming devices and depends on a relative proximity of the one and the second of the plurality of wireless gaming devices. The relative proximity may be determined by a signal strength received by the one from the second of the plurality of wireless gaming devices.

The method of FIG. 9 may be demonstrated in exemplary form by considering the participants on the playing field of FIG. 2. Here participants 231, 233, 235 or the associated gaming devices discover gaming device 223 as it travels in their general direction or a signal from user 221 simulating device 223 as a first gaming action. Participant 231 and perhaps 233 or 235 take evasive action such as taking cover behind the obstacle 219 or running as a counter gaming action. The simulated explosion of gaming device 223 as a grenade or specifically results thereof will depend on the relative proximity of the device 223 at the time of the explosion (a radio transmission that indicates explosion for example) to the devices 231, 233, 235 as well as the counter actions (hiding behind the obstacle or running or possession of personal protection devices) and there effectiveness. These results may be assessed at any of those devices and depend on signal strength that 223 is receiving from the others or signal strength from 223 that the others are receiving. The particulars may

include a fatal wound, if the signal strength exceeds some threshold or major or minor wound or no wound if the signal strength lies within other signal strength boundaries.

The apparatus, processes, and systems described and discussed above and the inventive principles thereof are intended to and have shown and demonstrated more flexible and autonomous gaming methods and apparatus. These techniques of utilizing peer-to-peer communications to establish mutually advantageous associations and gaming rules will alleviate problems caused by prior art inflexible gaming systems that are client server based or that depend on identical or identically equipped devices, thus providing a more enjoyable interactive gaming experience for users or participants in such games. Using these principles of establishing compatible capabilities and needs as well as mutually acceptable gaming rules will facilitate interactive gaming methodologies and experiences among a diverse assortment of gaming devices that are effective, efficient and friendly thus contributing to user satisfaction. It is expected that one of ordinary skill given the above described principles, concepts and examples will be able to implement other alternative gaming procedures that will also offer additional gaming experiences. It is anticipated that the claims below cover many such other examples.

This disclosure is intended to explain how to fashion and use various embodiments in accordance with the invention rather than to limit the true, intended, and fair scope and spirit thereof. The foregoing description is not intended to be exhaustive or to limit the invention to the precise form disclosed. Modifications or variations are possible in light of the above teachings. The embodiment(s) was chosen

and described to provide the best illustration of the principles of the invention and its practical application, and to enable one of ordinary skill in the art to utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the invention as determined by the appended claims, as may be amended during the pendency of this application for patent, and all equivalents thereof, when interpreted in accordance with the breadth to which they are fairly, legally, and equitably entitled.

CLAIMS

What is claimed is:

1. A wireless gaming device arranged and constructed for interactive gaming, the wireless gaming device comprising:

a transceiver; and

a controller, cooperatively operable with the transceiver, to

discover an other wireless gaming device; and

negotiate with the other wireless gaming device to identify compatible capabilities and needs relevant to a gaming scenario.

2. The wireless gaming device of claim 1 wherein said controller further negotiates gaming rules with the other wireless gaming device to establish the gaming scenario.

3. The wireless gaming device of claim 2 wherein said controller further negotiates the gaming rules including one of game rules, gaming device rules, and user rules.

4. The wireless gaming device of claim 3 wherein said controller further negotiates the game rules further including one of: type of game, game scenario preferences, and number of opponents.

5. The wireless gaming device of claim 3 wherein said controller further negotiates the gaming device rules including one of: graphical user interface constraints and other input output constraints.

6. The wireless gaming device of claim 1 wherein said controller further negotiates the user rules including one of: user limitations, duration of availability, access/security constraints, and user preferences.

7. The wireless gaming device of claim 1 wherein said controller further negotiates the compatible capabilities including one of: a data protocols, a data rate, display capabilities, available processing resources, and signal strength.

8. The wireless gaming device of claim 1 wherein said controller further negotiates the compatible needs including one of: a language for user consumption, external processing resources, and gaming software programs.

9. The wireless gaming device of claim 1 wherein said controller cooperatively with the transceiver further discovers a plurality of other wireless gaming devices and negotiates mutually compatible capabilities and needs relevant to a gaming scenario.

10. The wireless gaming device of claim 9 wherein said controller further negotiates compatible gaming rules with the plurality of other wireless gaming devices to establish a common gaming scenario.

11. A method of arranging an interactive game with a wireless gaming device, the method comprising:

discovering an other wireless gaming device;

negotiating with the other wireless gaming device; and

identifying, as a result of the negotiating, compatible capabilities and needs relevant to a gaming scenario.

12. The method of claim 11 wherein said identifying further includes identifying gaming rules that are compatible with the other wireless device and relevant to establishing the gaming scenario.

13. The method of claim 12 wherein said identifying the gaming rules includes identifying game rules further including one of; type of game, game scenario preferences, and number of opponents.

14. The method of claim 12 wherein said identifying the gaming rules includes identifying gaming device rules further including one of; graphical user interface constraints and other input output constraints.

15. The method of claim 12 wherein said identifying the gaming rules includes identifying user rules further including one of; user perception limitations, duration of availability, access/security constraints, and age preferences.

16. The method of claim 11 wherein said identifying the compatible capabilities further includes identifying one of; a data protocol, a data rate, display capabilities, available processing resources, and signal strength.

17. The method of claim 11 wherein said identifying the compatible needs further includes identifying one of; a language for user consumption, external processing resources, and gaming software programs.

18. The method of claim 11 wherein said discovering further includes discovering a plurality of other wireless gaming devices and said identifying includes identifying mutually compatible capabilities and needs relevant to a gaming scenario.

19. The method of claim 18 wherein said identifying further includes identifying compatible gaming rules with the plurality of other wireless gaming devices to establish a common gaming scenario among the plurality of other wireless gaming devices.

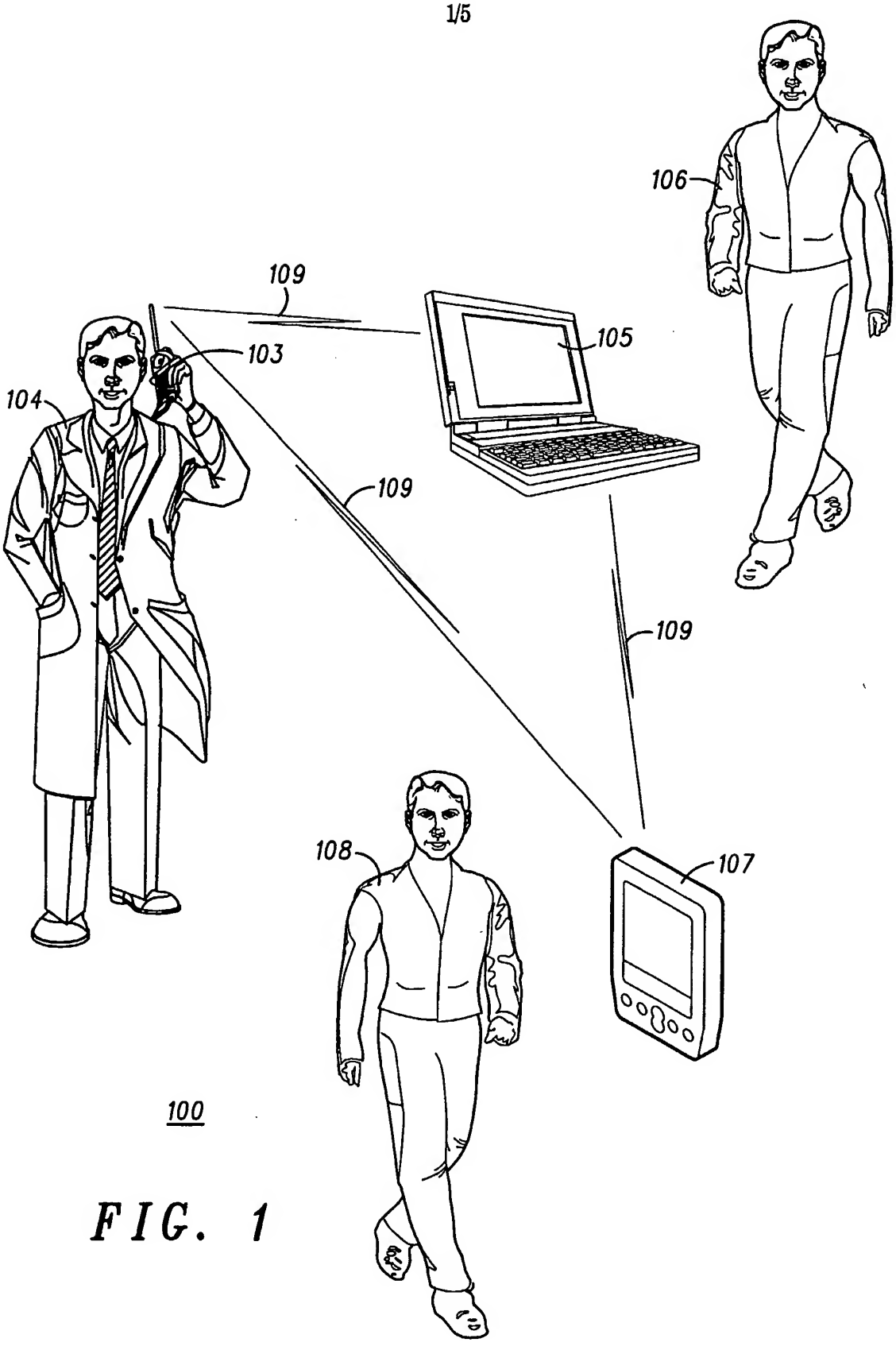
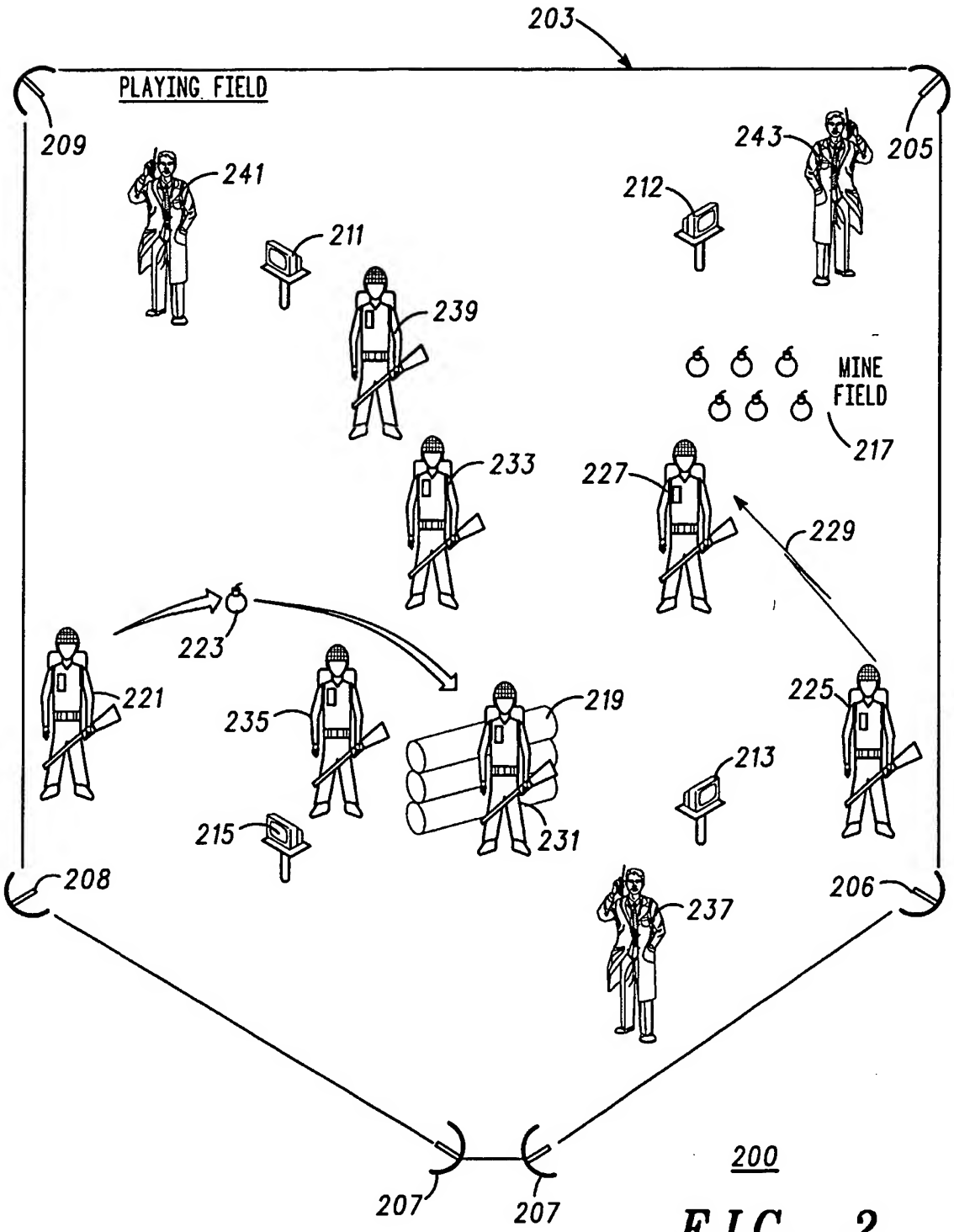


FIG. 1


203
PLAYING FIELD
209
205
241
243
211
212
239
MINE FIELD
217
233
227
229
223
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207
200

FIG. 2

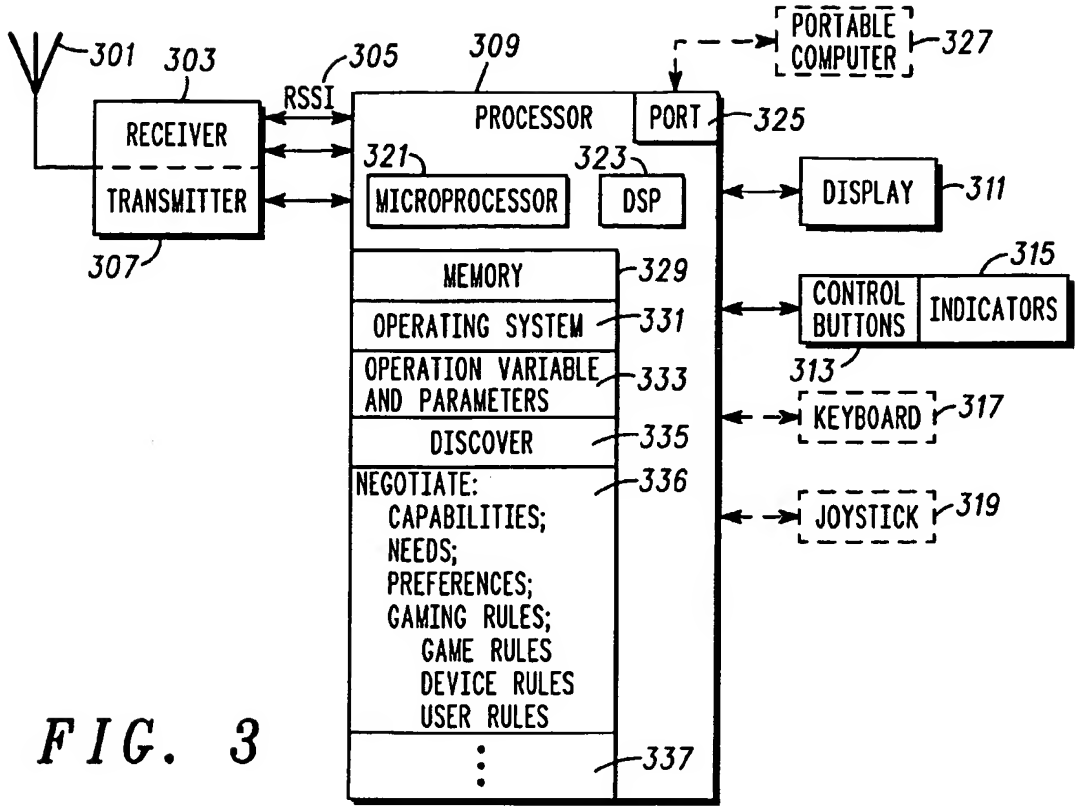

FIG. 3

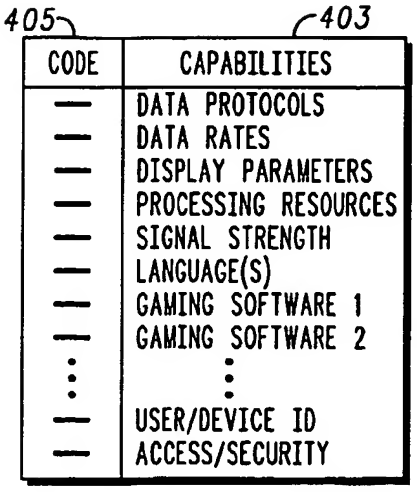

FIG. 4

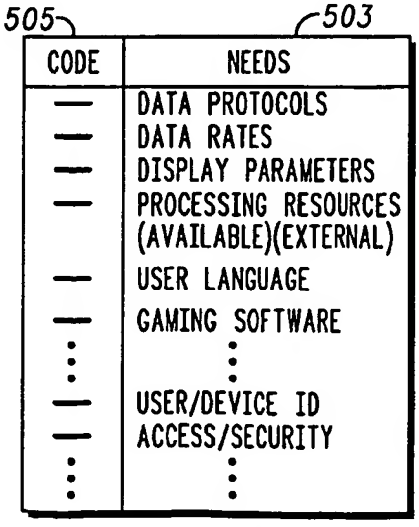

FIG. 5

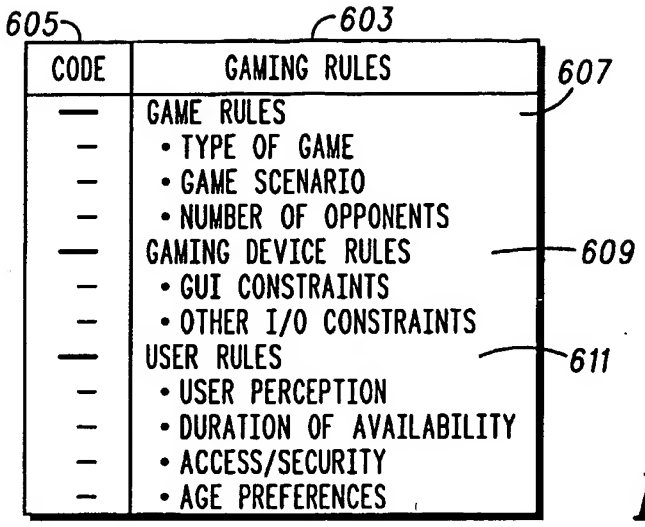
605
603
CODE
GAMING RULES
607
GAME RULES
• TYPE OF GAME
• GAME SCENARIO
• NUMBER OF OPPONENTS
GAMING DEVICE RULES
609
• GUI CONSTRAINTS
• OTHER I/O CONSTRAINTS
USER RULES
611
• USER PERCEPTION
• DURATION OF AVAILABILITY
• ACCESS/SECURITY
• AGE PREFERENCES

FIG. 6

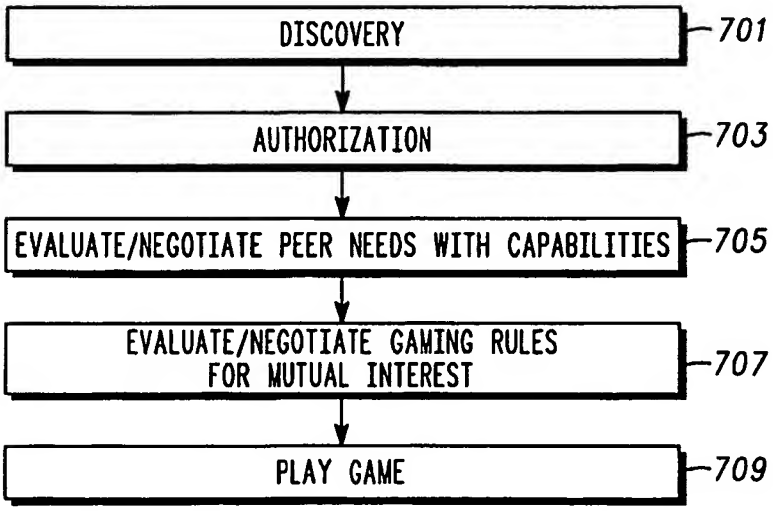
DISCOVERY
701
AUTHORIZATION
703
EVALUATE/NEGOTIATE PEER NEEDS WITH CAPABILITIES
705
EVALUATE/NEGOTIATE GAMING RULES FOR MUTUAL INTEREST
707
PLAY GAME
709

FIG. 7

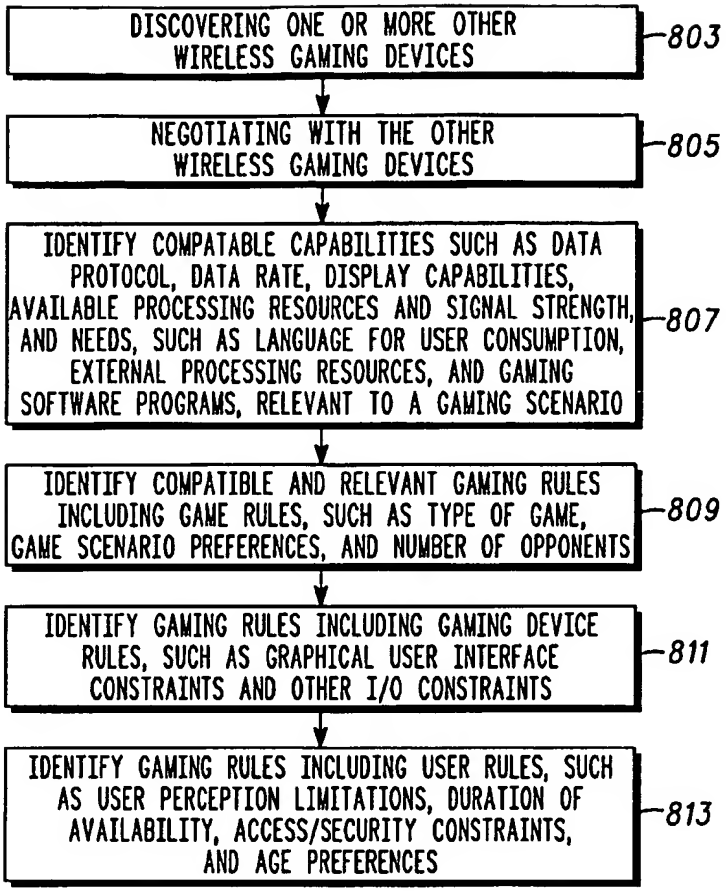
DISCOVERING ONE OR MORE OTHER WIRELESS GAMING DEVICES
803
NEGOTIATING WITH THE OTHER WIRELESS GAMING DEVICES
805
IDENTIFY COMPATABLE CAPABILITIES SUCH AS DATA PROTOCOL, DATA RATE, DISPLAY CAPABILITIES, AVAILABLE PROCESSING RESOURCES AND SIGNAL STRENGTH, AND NEEDS, SUCH AS LANGUAGE FOR USER CONSUMPTION, EXTERNAL PROCESSING RESOURCES, AND GAMING SOFTWARE PROGRAMS, RELEVANT TO A GAMING SCENARIO
807
IDENTIFY COMPATIBLE AND RELEVANT GAMING RULES INCLUDING GAME RULES, SUCH AS TYPE OF GAME, GAME SCENARIO PREFERENCES, AND NUMBER OF OPPONENTS
809
IDENTIFY GAMING RULES INCLUDING GAMING DEVICE RULES, SUCH AS GRAPHICAL USER INTERFACE CONSTRAINTS AND OTHER I/O CONSTRAINTS
811
IDENTIFY GAMING RULES INCLUDING USER RULES, SUCH AS USER PERCEPTION LIMITATIONS, DURATION OF AVAILABILITY, ACCESS/SECURITY CONSTRAINTS, AND AGE PREFERENCES
813

FIG. 8

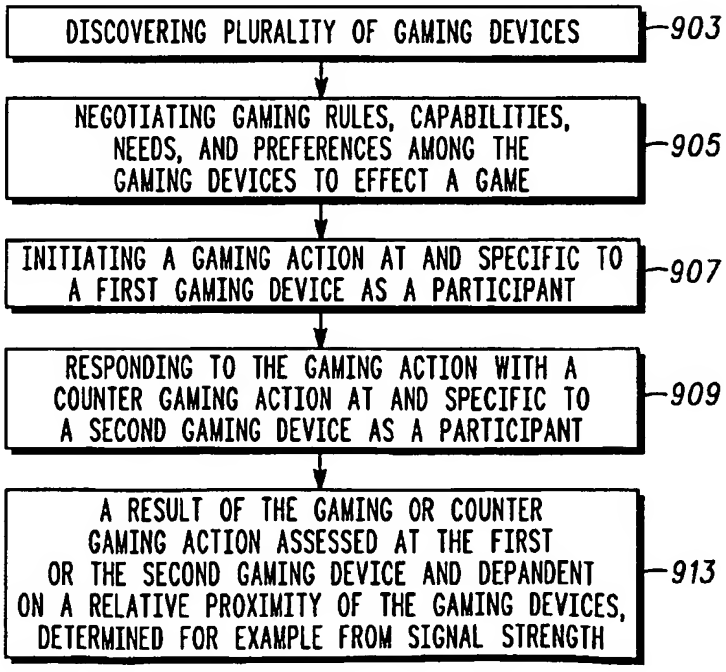
DISCOVERING PLURALITY OF GAMING DEVICES
903
NEGOTIATING GAMING RULES, CAPABILITIES, NEEDS, AND PREFERENCES AMONG THE GAMING DEVICES TO EFFECT A GAME
905
INITIATING A GAMING ACTION AT AND SPECIFIC TO A FIRST GAMING DEVICE AS A PARTICIPANT
907
RESPONDING TO THE GAMING ACTION WITH A COUNTER GAMING ACTION AT AND SPECIFIC TO A SECOND GAMING DEVICE AS A PARTICIPANT
909
A RESULT OF THE GAMING OR COUNTER GAMING ACTION ASSESSED AT THE FIRST OR THE SECOND GAMING DEVICE AND DEPANDENT ON A RELATIVE PROXIMITY OF THE GAMING DEVICES, DETERMINED FOR EXAMPLE FROM SIGNAL STRENGTH
913

FIG. 9